

It's the principle behind every clearance sale: The less a product is in demand, the less it sells for. It's why you can find the cheapest winter coats in March and the cheapest new cars at the end of a model year. So why can't we extend the same principle to the most basic commodity of all-electricity?

As a matter of fact, the demand for electricity fluctuates every day. It tends to be highest in the afternoon (when people are at work and when lights, computers, and heating and cooling are running at full blast) and lowest at night, when most appliances are off. But most people can't take full advantage of the lowest-demand hours, because homes can't "talk back" to utilities. Your home and your utility still have a primitive way of communicating: a meter that can spin faster or slower, but can't do much of anything else.

Imagine, though, that your home knew the real cost of power from second to second. Imagine that it could tell you the source of the power, from a coal-fired plant to a wind farm. Imagine that you could actually sell power *back* to the grid. Those are some of the principles behind what could be the biggest energy innovation on the horizon: the "smart grid," or what author Thomas Friedman calls the "Energy Internet."

Creating a smart grid means bringing real-time communication to the systems that store and transmit our energy. With a smart grid, you could load your dryer and dishwasher before you go to sleep, but program them to start only when electricity hits its lowest price of the night. You could charge your car battery at night and then sell back excess power when you get home from work; or you could sell the energy you harvest from your own solar panel. During storms, the sources of power outages would be easier to pinpoint, and your lights could come back on faster. And your utility could shrink its carbon footprint by knowing when to buy power from clean sources.

A smart grid could save you hundreds of dollars a year on your electric bill, and it could help us all use energy more efficiently, getting more output from fewer plants and expanding our use of renewable resources. It's one of the cases in which our environmental and economic interests are one and the same.

And it's coming sooner than you may think. President Obama has made it clear that, when it comes to ending this recession, we can't just cater to the impulses of the moment. We have to

take responsibility for our future, which means using the economic recovery plan to invest in some of our country's most important long-term priorities, including affordable healthcare, broadband Internet, and new energy technology. Upgrading our grid is one of the most promising of those investments. That's why the recovery plan sets aside \$4.5 billion to start building a smart grid. That money means jobs for American workers today; and tomorrow, it means cheaper energy and a cleaner environment.

Now that those funds are authorized, we have to make sure they're spent wisely. Creating a smart grid means updating everything from home meters to transmission lines to utilities. It will be a piecemeal process, because America has many regional electric systems, some using the latest technology, and some getting by with infrastructure that dates back to the New Deal. The first step will be building a common backbone, including better transmission efficiency across America. The systems that are already in the best condition are ready for smart home meters-but we can't ignore states that aren't yet ready to make the full leap. Energy independence and climate change are national challenges, and we can only face them together.

I know it can be hard to look so far ahead, at a time when so many of us are struggling just to pay the bills. But as President Obama reminded us, some of our biggest leaps have come in our darkest moments: "In the midst of civil war, we laid railroad tracks from one coast to anotherAnd a twilight struggle for freedom led to a nation of highways, an American on the moon, and an explosion of technology that still shapes our world."

One of the great advances that could come out of this dark moment is a smarter, greener way to light our homes, and a cleaner, cheaper, more sustainable system to power our future.